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	Iron ore mined (100,000 mt) X_1	Coal b/ (100,000 mt) X_2	Cement b/ (100,000 mt) X_3	Ferrous b/ c/ (100,000 mt) X_4	$X_1 X_1$	$X_1 X_2$	$X_1 X_3$	$X_1 X_4$	$X_2 X_3$	$X_2 X_4$	$X_3 X_4$
1950	995	409	14.1	40.1	1458.2	406955	14029.5	39891.2	5766.9	16400.9	565.41
1951	1105	508	24.8	61.4	1699.2	561540	27404.0	67817.0	12599.2	31191.2	1522.72
1952	1321	639	28.6	82.9	2067.5	838863	37780.6	109519.4	18267.4	52941.5	2370.94
1953	1604	666	38.7	102.4	2411.1	1068864	62074.8	164249.6	25774.2	68198.4	3962.88
1954	1926	795	45.8	131.3	2898.1	1531170	88210.8	252883.8	36411.0	104383.5	6011.54
1955	1934	936	45.0	163.2	3078.2	1810224	87030.0	315628.8	42120.0	152755.2	7344.00
1956	2460	1059	64.0	260.5	3843.5	2605140	157440.0	640830.0	67776.0	275869.5	16672.00
1957	2740	1242	67.0	306.5	4355.5	3403080	183580.0	839810.0	83214.0	380673.0	20535.50
	14085	6250	326.0	1148.3	21811.3	12225008	657549.7	2430659.6	291.2	1082113.2	58986.99
	1760.62	781.25	41.00	143.54	2726.41						

a. N = 8 (problem of allowing for small numbers of observations and the corresponding problem of degrees of freedom was not considered). After computations, data were rounded for ease of presentation.
b. Excluding handicraft production.
c. Including iron ore, pig iron, crude steel, and finished steel.

	X_1^2	X_2^2	X_3^2	X_4^2	$(X_i)^2$
1950	990025	167281	198.81	1608.01	2126347.24
1951	1221025	258064	615.04	3769.96	2887280.64
1952	1745041	403225	817.96	6872.41	4274556.25
1953	2572816	443556	1497.69	10485.76	5613403.21
1954	3709476	632025	2097.64	17239.69	8398983.61
1955	3740356	876096	2025.00	26634.24	9475315.24
1956	6051600	1121481	4096.00	67860.25	14772492.25
195	7507600	1542564	4489.00	93942.25	18970380.25
		3444292	[illegible]	22[illegible]	6671758.69
		[illegible]	[illegible]	[illegible]	[illegible]44.84

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	Sum	Mean	Sum of Squares	Adjustment	Adjusted Sum of Squares	Variance	Standard Deviation
X_1	14085.0	1760.62	27537939.00	24798403.12	2739535.88	342441.984	585.183
X_2	6250.0	781.25	5444292.00	4882812.50	561479.50	70184.938	264.924
X_3	328.0	41.00	15837.14	13448.00	2389.14	298.642	17.281
X_4	1148.3	143.54	228412.57	164824.11	63588.46	7948.557	89.155
Total	21811.3	2726.41	33226480.71	29859487.73	3366992.97	420874.122	648.749
(2) Total From Below			33492277.98	29607113.22	3885164.75	485645.595	696.884
Grand Total			66718758.69	59466600.95	7252157.73	906519.717	914978.337
	21811.3	2726.41	66718758.69	59466590.06	7252168.63	906521.079	914979.045

	Sum of Products	Adjustment	Adjusted Sum of Products	Covariance	Products of Standard Deviation	Correlation Coefficient
X_1 and X_2	12225008.00	11003906.25	1221101.75	152637.718c	155029.5509	0.985
X_1 and X_3	657549.70	577485.00	80064.70	10008.0875	10112.7575	0.990
X_1 and X_4	2430659.60	2021725.69	408933.91	51116.7391	52171.9931	0.980
X_2 and X_3	291821.50	256250.00	35571.50	4446.4375	4578.2311	0.971
X_2 and X_4	1082113.20	897109.38	185003.82	23125.4781	23619.2197	0.979
X_3 and X_4	58986.99	47080.30	11906.69	1488.3362	154C.7091	0.966
Total	16746138.99	14803556.61	1942582.38	242822.7973	247052.4614	
(2) (Total)	33492277.98	29607113.22	3885164.75	485645.5946	494104.9228	

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$$a = \bar{X}_1 - b_2 \bar{X}_2 - b_3 \bar{X}_3 - b_4 \bar{X}_4$$

(1) $X_1 X_2 = b_2 X_2^2 + b_3 X_2 X_3 + b_4 X_2 X_4$

(2) $X_1 X_3 = b_2 X_2 X_3 + b_3 X_3^2 + b_4 X_3 X_4$

(3) $X_1 X_4 = b_2 X_2 X_4 + b_3 X_3 X_4 + b_4 X_4^2$

(1) 1,221,101.75 = 561,479.50 b_2 + 35,571.50 b_3 + 185,003.82 b_4

(2) 80,064.70 = 35,571.50 b_2 + 2,389.14 b_3 + 11,906.69 b_4

(3) 408,933.91 = 185,003.82 b_2 + 11,906.69 b_3 + 63,588.46 b_4

By solving the simultaneous equations the following answers are obtained:

$b_2 = 0.6174$

$b_3 = 18.28$

$b_4 = 1.211$

$a = 1760.62 - (0.6174)(781.25) - (18.28)(41.00) - (1.211)(143.54)$

$a = 354.8$

Substitution in correlation equation gives:

$$X = a + b_2 X_2 + b_3 X_3 + b_4 X_4$$

Excluding handicraft $X_1 = 354.8 + (0.6174)(270) + (18.28)(8.7) + (1.211)(9)$

X_1 = 385 million tons originated

Including handicraft $X_o = 354.8 + (0.6174)(270) + (18.28)(11) + (1.211)(9)$

X_o = 520 million tons originated

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